

AUG 20 1926

PLASTICS

A Periodical Devoted to the Manufacture and Use of Composition Products

AUGUST, 1926

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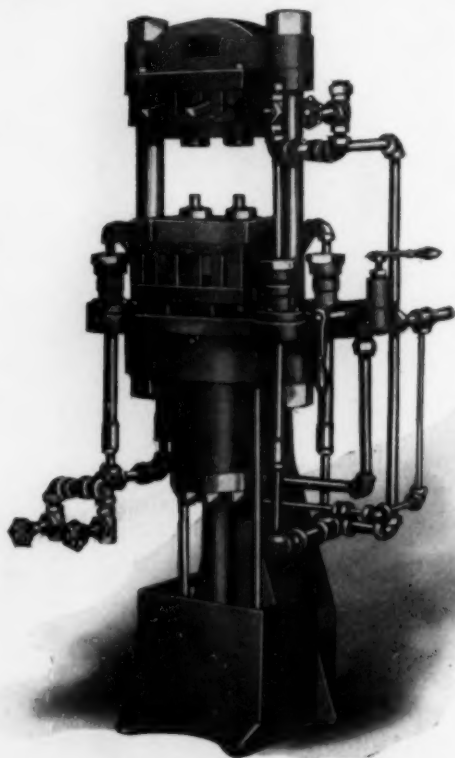
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BEGINNING with this issue PLASTICS has added to its number of pages. This was found necessary due to the steady increase in the amount of advertising. Certainly we have no complaint because of advertising having crowded the text pages; for it not only helps to alleviate publishers' lean and hungry looks, but also enables them to enlarge and help the paper editorially.

It is always our policy to devote sufficient editorial content to properly handle the material of value to the industry.

You, Mr. Reader, will be glad to hear that PLASTICS has shown a higher advertising lineage each month since its existence. This is a remarkable tribute to our reader's interest, as no industrial paper can progress without the support of those men who study its columns, both as an educative vehicle and as a medium to carry a business message to the trade.

Not only will the editorial content be maintained but it will always be our endeavor to keep the highest standard possible, commensurate with its practical application. In fact, wherever possible, everything will be done to keep PLASTICS as the paper that will consistently serve this industry.

Plans are made for several interesting departments that will add to the helpful value of the magazine. Also, beginning with the new year the page size will be increased so as to make PLASTICS handsomer and more easily readable.

This growth leads inevitably to the conclusion that many fine concerns believe that this is a productive medium to carry their message to the trade. There are, unfortunately, still some logical advertisers who do not use PLASTICS for this purpose and we suggest that they give most earnest thought to these conclusions.

The Publishers.

PLASTICS

A periodical devoted to the manufacture and use of plastic and composition products

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AUGUST, 1926

No. 8

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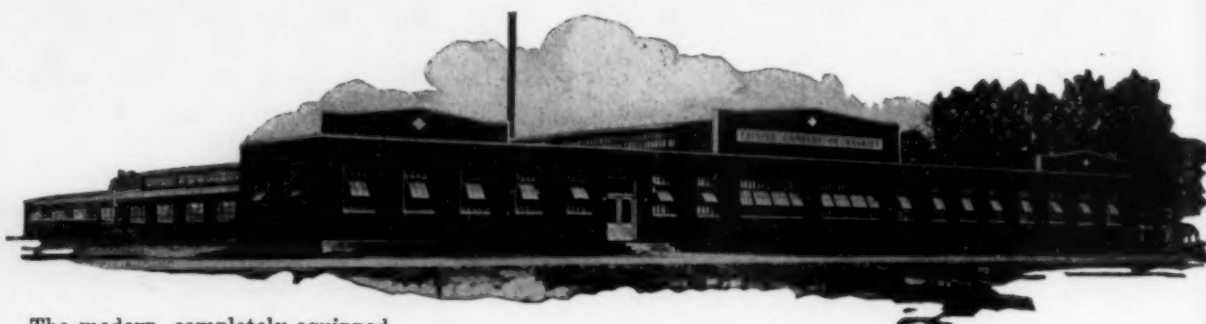
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Vol. 2

AUGUST, 1926

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Safety First in Pyroxylin Plants

Automatic extinguishers and trained personnel
will save many lives and valuable property

By Director Bahls

From Gummi Zeitung

ALTHOUGH it can be stated with considerable accuracy that celluloid and other pyroxylin plastics, when in their final fabricated form, are not particularly hazardous to handle, the same is not true of their manufacture. The operations required to form the various articles, especially cutting, stamping and polishing, lead to conditions that can easily lead to a dangerous conflagration, unless proper means for at once combatting the fire are provided. The following article is a short resume of an interesting account of the methods evolved in Germany for the control of fires in celluloid plants and such as fabricate this pyroxylin plastic. Mr. Bahls is director of a plant at Eilenburg, Germany.

After describing the usual sprinkler system, the advantages of sub-dividing the work-rooms and storage sheds, so as to localize any fire is discussed. The use of hand fire-extinguishers, both of the acid and soda type,

It is the publication of items like that in the adjoining column that undermine the public's confidence in the pyroxylin plastics. An active publicity

5 GIRLS DEAD, 8 HURT IN FIRE

Exploding Celluloid in Toy Shop Causes Disaster at Rockford, Ill.

Rockford, Ill., May 28.—(By the Associated Press.)—Five girls are dead and eight persons are known to be seriously injured, as the result of a fire which swept a building occupied by the Sutton Toy Shop, a concern dealing in automobile accessories. The bodies were burned so badly they could not be recognized.

One of the injured girls, Catherine Wood, was burned so severely about the face that it is feared she may go blind. Others suffered sprains and injuries in escaping from the second floor of the building. John Sutton, head of the firm, was seriously burned when he insisted on attempts at rescue until forcibly restrained by the firemen.

Eight Escape.

All but five of the 13 girls employed on the second floor succeeded in finding their way out of the smoke filled room down the only stairway. The bodies of the five were found by firemen who fought their way into the building. The fire started when a strip of celluloid being sawed in a machine on the ground floor, burst into flames.

The place was crowded with machinery installed for the purpose of turning out "California" tops, and the girls were working in a small room near the building.

carbon tetrachloride type and foam extinguishers is touched upon. It is stated that if properly installed and intelligently used, carbon dioxide, as usually bought in compressed or liquefied form in steel cylinders, has proven quite successful.

The main danger points around a plant fabricating pyroxylin plastics are the rooms in which the product is sawed and planed, for even if water is used for cooling, it quite often happens that some workman will neglect this precaution and a fire will result. The use of an air-blast for cooling celluloid while cutting or sawing is considered to be poor practice, as it not only distributes the chips and dust but actually provides additional draft should a flare-up occur. The use of suction systems, such as are sometimes employed in wood-working establishments is also condemned as it adds considerably to the fire risk due to the accumulation of large amounts of finely divided highly inflammable material.

campaign should be undertaken to counteract the effects of such occurrences. By making your own plant safe, you can contribute toward this cause.

The accumulation of considerable quantities of celluloid chips and shavings upon the floors of workrooms should be carefully avoided, as such material is more dangerous than commonly supposed. Ordinary wood shavings and the like will merely burn, but such finely divided celluloid will burn almost explosively, so that the flaming particles will be violently thrown about the place, causing a rapid spread of the blaze.

Teach Your Workers

The use of hand extinguishers should be taught, as they must be handled differently with a celluloid scrap fire than with ordinary material. The stream must not be played with any great force upon the burning material, but should rather be so directed that it falls vertically upon the same, so that a protecting encrustation can form. This is especially true of the foam type of extinguishers. When coupled with automatic sprinklers and proper subdivision of the plant, it is often possible to limit the fire to a small part of the factory.

Due to the rapidity of the spread of a pyroxylin plastic conflagration, the ordinary heat-released type of sprinklers are hardly fast enough. It is suggested that the sprinkler-heads be released by the burning away of a highly inflammable cellulose nitrate or pyroxylin plastic thread or wire.

These combustible threads or links are used in connection with celluloid mixers and malaxating rolls. In fabricating plants they are attached to apparatus provided with band saws, circular saws, planers and the like.

Automatic Devices

If a sufficiently strong spring is provided which will instantaneously turn on the water valve as soon as the retaining celluloid thread burns, a very rapid quenching effect can be attained. To prevent the accidental rupture of the retaining celluloid thread by accidental contact, the same is protected

by a metal guard. The thread should pass very closely to the point where the fire is likely to originate on the machine.

As to fire doors and partitions, it is pointed out that rolling doors of the corrugated type, coming down from above and working in a groove, are, in actual use, much more successful for subdividing a plant and localizing a fire than the ordinary "fire-doors." The latter often warp so much due to the heat that they allow the fire to spread to adjoining rooms, while the rolling corrugated shutter may become white hot without actually giving way and allowing a free draft.

Do your share!

All executives in plants handling pyroxylin plastics are invited to send in suggestions on safety measures.

Let's make it a symposium on the subject and work for

Safety always

This corrugated shutter should not be provided with springs or counterweights so that it will stand at any height, but rather should be weighted in such a way that the rupture or burning away of a combustible (not fusible) link will instantly release it and assure its complete descent to form an air and fire-tight partition. Provisions should also be provided for operating this partition from either side, to prevent trapping of personnel in the threatened area.

As it is known that the Germans are proverbially careful and methodical in their manufacturing operations, the above condensed review may prove valuable to many of our readers who have to deal with pyroxylin plastics in quantity.

In connection with the suggestions already made, a correspondent signing himself A. J., contributes the following suggestions:

The size of the celluloid-manufacturing establishment has a decided bearing upon the type of protection against fire adopted. One scheme does not suffice for all.

Trained Fire Fighters

Regarding automatic fire-extinguishing devices, such as already described, it should not be forgotten that they, in common with all so-called "automatic" apparatus, sometimes fail to function just when they are most needed. In addition to all this it is absolutely essential to have at least a few of the workmen and operators thoroughly trained so that when a fire breaks out that they will not simply seek safety in precipitate flight, but will exert every effort to confine the conflagration to its point of origin.

Any one who has ever experienced a fire in a pyroxylin products plant, will agree that the first flame is usually confined to a relatively small amount of material, and due to its rapid burning makes it appear as though a great deal more material is actually on fire than is the case. The bright light given off often makes it appear as though the blaze were much larger, and the operators should be trained not to be too much afraid of the fire, but to immediately seize the nearest sand-bucket or fire extinguisher and to attack the blaze while the rest of the workmen are leaving the room in an orderly manner.

Quick Action Essential

Fire drills are for that reason absolutely essential. Many lives are needlessly sacrificed due to lack of the simplest precautions. An incipient celluloid fire can often be put out by prompt action, while if action were delayed until the regular fire hose could be unreeled, the whole floor would already be a mass of flame. Water pails, and especially sand pails, preferably wet sand, should be placed at strategic points so as to be handy. Also all fire extinguishers should be thoroughly under-

(Continued on page 276)

Magnesite Cement as a Plastic

Sorel cement used in conjunction with proper fillers gives considerable promise of utility

MAGNESITE cements have been used for a long time for making the well known resilient type of composition flooring, which is installed in a plastic form, which makes it possible to form the floor and mop board in one slab, thereby eliminating the dust-catching crack which ordinarily occurs between the junction of horizontal and vertical surfaces. Also these cements have been used for making floor tile and a wall tile which resembles certain kinds of stone, such as "Travertine" and "Italian" marble.

The employment of these cements, also known as magnesium oxychloride or Sorel cement, as a stucco material, has been strongly recommended and its use is spreading. The waterproof properties have been vastly improved, as the result of pains-taking research and it is considered an acceptable material for the outside decoration of buildings.

That it could be employed however as an outdoor plastic decorating medium for the ornamentation of public buildings is somewhat of an innovation. According to a recent article in *Popular Mechanics* (March, 1925), magnesium oxychloride cement mixed with colored glass has been successfully applied to the outside of the new courthouse at Midland, Michi-

gan. This city is the home of the Dow Chemical Co., one of the largest American producers of magnesium chloride and magnesium oxide—the raw materials for the oxychloride cement. The artist is Mr. Paul Honore, of Detroit. *Popular Mechanics* has this to say about the new plastic material:

Paul Honore's Work

"The big point about colored-glass cement is that it is lasting. Never will the richness fade from Honore's pictures of the pioneers of Midland County. Centuries from now, if the building is standing, visitors will still have their retinas tickled by the ruddy splendor of sunsets blazing on the walls, the gaudiness of woodmen's mackinaws and bandannas, and the crazy-quilt riots of colors shown in Indian headdress and blankets.

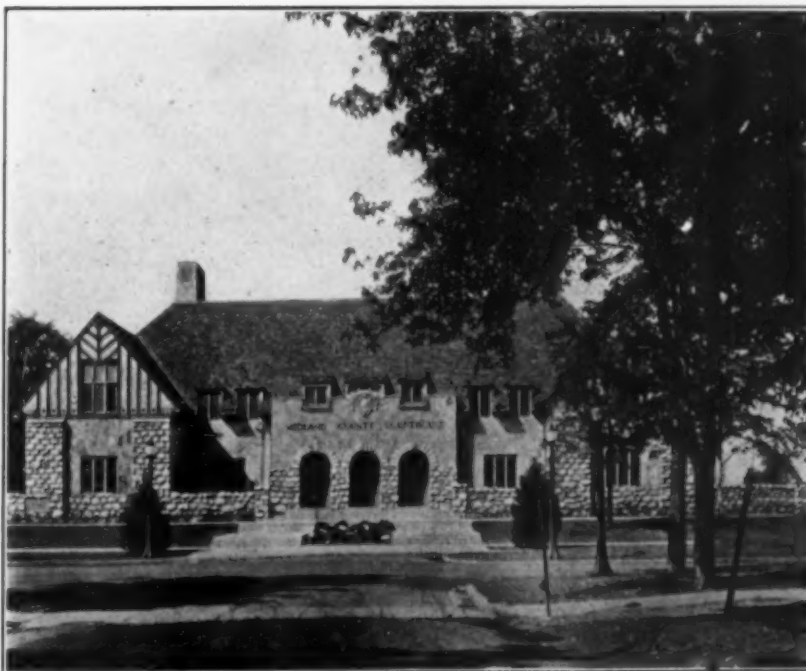
"Heretofore the only kind of

outside pictures that have been possible in this rigorous climate was the sort seen on the front of houses in Bavaria and Tyrol—like our more permanent billboards, done in oil paint. Periodic retouching is necessary to keep these designs fresh. Colored stuccos and plasters have been tried, but they will not weather nor dry uniformly. Our houses never could burst out in pictorial color because a soft, imperishable medium was lacking.

"The uninformed person might ask, 'Why not pour some good fast pigment into cement and make colored designs with that?' There are several objections, an important one being that the ultra-violet rays of the sun would gradually bleach out the color. The chemists who made Honore's cement for him couldn't wait a lifetime to see how fadeless their product was, so they did the next best thing

to make sure. They exposed samples of the glass-color material to special quartz lamps that in several weeks' time gave the equivalent to 250 years of sunlight. The cement didn't fade a particle.

"Here's the recipe for the cement: Finely ground glass is mixed up in magnesite cement and then transformed into a paste by the addition of liquid magnesium chlor-



The beautiful and unique Court House at Midland, Mich., is decorated with magnesite cement stucco depicting historical scenes

Photograph by courtesy of the Dow Chemical Co.

ide. The artist applied the material with a small trowel, like a putty knife, anywhere from one-eighth to one-quarter inch thick. The mixture sets in about four hours. When dry, both its feel and its appearance at close range remind one of the surface of a grindstone. Visualize a slab of colored sandstone, and you have a good idea how the material looks.

Permanent Color

"Mr. Honore explained why the color was so permanent. 'Old paintings and tapestries have retained their color for centuries,' he said, 'because they were kept in houses with glass windows. That is to say, solar light, before it reached them, was robbed of its destructive rays by the glass. Glass screens off the ultra-violet rays.

"The color in my murals is imprisoned, so to speak, in sun-proof grains of glass. The bleaching rays can never reach the pigment. Glass cement is also immune to gases and acid fumes that float through the air in a chemical manufacturing town like Midland. In addition to these lasting qualities, the new cement also has non-cracking features to commend it.'

When Herbert H. Dow, of Midland, offered his idea of what the new court-house should be like, he proposed an American design—not a Grecian temple with a blindfolded statue of Justice in front or on a dome. Furthermore, it was to be constructed in the field stone of the district, of plaster made there and timbers hewn there. Once the building started, almost every farmer contributed at least one load of stone so that the court-house even has sentiment mixed in its mortar, so to speak.

"With this aim of a home-products and home-folks building in mind, the other problem was to get a design that would be appropriate. Bloodgood Tuttle of Cleveland, the architect, was told to design a building that would fit in and yet stand out. He chose a modified Tudor

style. Honore was commissioned to climax the whole project by depicting on the walls the life and surroundings of the original home folks of the county, the first settlers and their red-skinned neighbors.

"Chemists did the research work that led to the new medium. They began with stuccos and cements. When they hit on the ground glass idea, they still had a lot of work ahead of them in determining what 'mesh' of ground glass was best, and other technical details. But now that the process is perfected, a new plastic medium is at public disposal for a variety of uses. Lampstands, window boxes and molded decorative articles of all kinds may possibly be fashioned from it."

Regarding the suggestion as to the making of molded articles, this is very timely. Sorel cement (magnesium oxy-chloride) when used with the proper type aggregate, is an excellent binding medium. It can be mixed so "dry" that it appears to be entirely devoid of moisture on cursory examination. Such material can be successfully molded in the ordinary types of hydraulic press, and taken from the mold immediately, being sufficiently hard to permit careful handling. The molded pieces are then set aside to "set up" and harden. This takes about fifteen hours, and in twenty-four hours the articles are hard enough to stand handling.

The magnesium oxychloride
(Continued on page 277)

Pollopas Organic Glass to be Manufactured in England

Plans are now under discussion for the manufacture in Great Britain of the new flexible glass invented by Dr. Fritz Pollak and Dr. Kurt Ripper in

Vienna. Dr. Pollak worked for many years in a laboratory in Manchester, England.

It is claimed that the properties of this new synthetic glass include resistance to acids and most alkaline solutions, that it has a refraction equal to crystal and that, unlike ordinary glass, it does not intercept ultra-violet rays. It is further claimed that it can be colored with aniline dyes and produced in any color. Its weight is about one-fourth that of flint glass. Used in automobile screens it is said to cut the weight down by 75 per cent and does not lose its flexibility or become less translucent in bad weather.

The possible commercial uses of the new material are held to be innumerable, and range from the substitution of glass in hospital "sunlight treatment" wards to the making of fountain pens with transparent barrels, which will neither break nor splinter if dropped.



The flexibility of the new transparent synthetic resin is quite evident.

The Versatility of Casein

The large number of applications for this product is being augmented daily

By A. C. Blackall

CASEIN, as is well-known, is the chief protein constituent of milk. It is one of the nuclealbumin group of proteids, and is precipitated from the milk of various animals, especially by the action of rennet. Its name is derived from the Latin caseus (cheese). There is no reliable evidence available of the occurrence of casein in plants.

As a result of the research carried out by chemists, especially in America and Europe, a large number of applications have been found for casein in various industries, and new uses are being discovered for it almost daily. It now enters into the composition of a variety of commercial products, including shoe polishes, radio parts, glazed papers, cold-water paints, and plastic substances used as substitutes for celluloid, bone, ivory, amber, tortoise-shell and ebony. Many factories in Continental Europe have established a world-wide market for this casein and its products, and the rapidly increasing prosperity of these factories is indicated by the latest return of one of them, which discloses an increase in net profits for 1925 of nearly 60 per cent and a dividend increase from 4 to 7 per cent.

The Essential Cow

Skimmed milk is the raw material used for the production of casein, and consequently it is a by-product of creameries and cheese factories—the most important by-product, in fact. As it exists in milk casein is more properly designated caseinogen, since it is chemically changed by

The growth of the casein plastics industry is a surprise to many of the makers and users of the competing types of material. Undoubtedly, however, there is little danger of the elimination of any one product by this lusty newcomer. Here is simply another useful synthetic substance to supply the world's needs.

the rennet and then unites with the calcium salts present to form the curd, carrying with it in its separation globules of fat. The varieties from different milks seem to differ somewhat in properties. In addition to its importance in cheese and other food preparations and for the uses enumerated above, casein is valuable as an albumin substitute in calico printing and as a glue substitute in the preparation of certain cements.

Preparing Casein

There are three ways of preparing casein. Firstly, there is the natural sour process, in which the milk is allowed to stand until the production of lactic acid is almost enough to separate the curd from the whey. Secondly, it can be produced by acidification by hydrochloric or sulphuric acid, in which the acid is added directly to the milk. This process is far more rapid than the first, and a special process has been developed of using hydrochloric acid, known as the grain-curd method, by which a casein of excep-

tional purity may be produced. Pure casein is a white crumbling substance of acid character. Usually sulphuric acid is not used when milk sugar is to be prepared as a by-product from the whey, because a precipitate of calcium sulphate is left, and this substance proves troublesome.

The third and best-known method is the aforementioned rennet process. For this the milk must be perfectly sweet. The milk is first heated to about 100 degrees F. and four ounces of rennet are added to every hundred gallons of milk. Two other processes are in use in France for making casein, the pressure precipitation and the electrical precipitation methods, though the latter depends largely on cheap electric power for commercial success.

A Profitable Industry

Undoubtedly the manufacture of casein can be an exceedingly profitable business, but concerns considering taking up this line must first of all consider the quantity and regularity of supply of skimmed milk and the quality of the raw material. Unless the minimum of about 10,000 pounds of skimmed milk is available daily the installation of a complete drying plant is not to be recommended. In fact, in some cases—particularly in Denmark, France and the Argentine—it is common practice to ship green pressed curd with a moisture content of about 50 per cent to central drying plants. The production of a

(Continued on page 278)

Molded Gears With Metallic Centers

Waste cut down materially by wrapping phenol-resin-impregnated strips around an iron core

COMPOSITE gears made by molding a fibrous material impregnated with a phenolic resin binder have the advantage of providing noiseless transmission of power while at the same time they have the rigidity and strength of a metal gear.

According to a recent invention, assigned to the Westinghouse Electric & Manufacturing Co., by George S. Turner and Benjamin J. Gudge, U. S. Patent 1,575,020, March 2nd, 1926, such composite gears can be manufactured quickly and economically.

Other Methods

It has been proposed to form such articles by a method which comprises providing a mold, placing a metallic member the outer surface of which is roughened by knurling or grooving in the matrix thereof, assembling sectors or rings, punched or cut from sheets of fibrous material impregnated with a binder, in the matrix of the mold about the periphery of the metallic member, and applying heat and pressure to form a unitary mass.

In forming the sectors or rings from the sheets, approximately 40% of the material is wasted, and, in assembling them in the molds, considerable manual labor is involved. A further difficulty is in that a large number of expensive molds are required to permit continuous operation.

Assembling Material

The present invention obviates these difficulties, and allows of the fabrication of such composite articles as gear wheels efficiently and without waste.

In accordance with the invention, a strip of suitable fibrous material, such as cotton, duck,

paper, asbestos, leather, felt or the like, impregnated with a hardenable phenol resin is formed into flat layers of contiguous sections, either by folding the strip itself, or by wind-

of fibrous material assembled thereon, ready for molding. Fig. 3 is a view of a strip of varying width formed into a helically wound layer. Fig. 4 is a plan view of a metallic member having a formed layer of fibrous material of varying width assembled thereon ready for molding, and Fig. 5 is a sectional view on line V-V of Fig. 4.

Hardening

The material is hardened in a mold comprising a ring or matrix in which the assembled structure is placed. A pressure plate is fitted into the matrix to close the mold which is inserted between the plates of a hydraulic press. Heat and pressure are applied to fuse the binder, softening the material and compacting it, and forcing the fibers into the interstices of the knurled surface of the metallic member. Continued heat and pressure hardens the binder and forms an integral unit from the various parts.

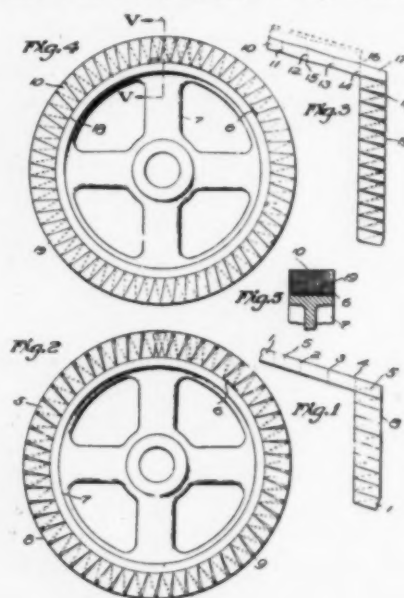
After removing the molds, the necessary machining operations can be performed.

Government Fostered Toy Industry Makes Big Gain

TOKYO—Tremendous gains in toy manufacturing for foreign trade, shown by export figures, are encouraging to the Japanese's ambition to make their country the premier toyshop of the world.

Japan's foreign trade in toys last year was approximately \$8,000,000. This was nearly double the total for the preceding year and was more than the record established during the boom years of the world war.

The toys that go into foreign markets are chiefly those made of celluloid, rubber and wood.



ing it helically and then pressing it flat. The material produced by so folding the strips is then laid or wound around the knurled surface of the central metallic portions, superimposing sufficient of the layers to produce the desired thickness of the finished article.

The assembled materials are then placed into a mold, and heat and pressure applied to compact them, forming a unitary article. From this the gears or other forms are made by the usual methods of machining.

Operating Details

The accompanying drawing will make the invention clear. Figure 1 is a view of a strip of fibrous material formed into layers of contiguous section. Fig. 2 is a plan view of a metallic member having a formed layer

Albertol Resins in Electrical Industries

European phenol-formaldehyde condensation products differ in properties from American types

By Ewald Fonrobert

From Kunststoffe

The Albertol Resins are the products of the European firm of K. Albert and have been on the market abroad for about six years. Several oil-soluble synthetic resins, suitable for making varnishes and air-drying lacquers have been produced by this inventor. The full line of Albertols have been described by the author and published in translation in Chemical Age (N. Y.) in 1924. The section here reproduced is of especial interest to molders.

IN the electrical industries the use of synthetic resins is by no means new, in fact it was in these industries that the synthetic phenol-aldehyde resins found their first and most successful application. The oil-soluble resins now available will also play a considerable part, as they are suitable in the form of varnishes and lacquers for impregnating fabrics which it is desired to render non-conducting. Such fabrics, impregnated with Kauri-Albertol 103-C extra show a resistance to puncture of from 8 to 10,000 volts per millimeter.

Use With Fillers

An especially valuable property inherent in these resins is their applicability for the production of molded goods, such as switch boxes, extension plugs, radio-panels and condenser parts and the like, in which case they are employed in admixture with inert fillers such as asbestos, chalk, clay, kieselguhr, rottenstone, barium sulphate and the like. A black color can be obtained by the addition of pitch or nigrosine, the usual types of lampblack being counterindicated due to their conductivity. However there can be obtained on the American market a special form of carbon black derived from natural gas which is sufficiently non-conducting to allow of its use, and gives excellent re-

sults, the molded goods having a deep black color and very high lustre.

Hardenable Resins

The new and very valuable properties of the type of synthetic resins originally described by Baekeland, and developed to a high state of perfection, namely the ability to be converted into a non-fusible and insoluble state, renders available a material the like of which nature has not provided. The Albertol works also turn out such types of resins, all of them being designated by the prefix "special," and which are furnished both in the liquid state for impregnation, and as solids.

They are: Special Albertols U 4055, 70-U, 71-V, which are liquid; and Special Albertols 72-w, 73-x and 75-Z which are solids. The liquid types can be used with fillers without the necessity for employing any solvents. There has been a general impression in the trade that the liquid resins furnished by the manufacturers for purposes of producing finally insoluble resins were solutions, but this is not so; they are simply intermediate products, which on further heating are converted into the infusible-insoluble stage. Some of these liquid resins can be mixed with fillers and pressed cold, after which they are placed in suitable heating ovens

and heated to 150-170°, this treatment being preferably preceded by careful and prolonged drying or heating at 100°C. The proportion of fillers can be from 84 to 87 per cent. to 13-16 per cent. of resin. The reduction in size on baking averages about 1 per cent.

Phenol-free Products

The special Albertol 71-V is the first known liquid artificial resin which is absolutely free from uncombined cresol, and which does not darken on heating to 100°C, and only very slightly when heated higher. Nevertheless it can be converted into the final infusible-insoluble stage by heating. Its only drawback is its relatively high price. The solid types are employed either as powder, or in solution. For preparing built-up paper insulation material, the three Albertol types are excellent, and by using as little as 50 to 55 grams of resin per square meter of paper, panels were prepared which showed a resistance to puncture of 43,000 volts per millimeter. These Albertols, being entirely free from uncombined phenols should, theoretically, be superior even to the older types, as the gradual diminution of the insulating power of the latter is ascribed to free phenolic bodies.

Carbon Brushes

The hardening-type of resins can be used as insulating varnishes in alcoholic solution, but the coatings must be baked in to get the desired effect.

An interesting use of these Albertols is for the impregnation of carbon-brushes for dynamos, where, although they are inherently insulators, the con-

(Continued on page 280)

Embargo on Bakelite "C"

Foreign competition complained of

WHAT in many ways is the most important case to come before the Tariff Commission since the passage of the Tariff Act of 1922," according to an editorial in the July issue of Chemical and Metallurgical Engineering, involves charges of unfair competition in the importation of synthetic resins. The petition of the Bakelite Corporation to make permanent the temporary embargo on the importation of these resin products issued last April by President Coolidge, marks the first outstanding attempt to combat unfair competition by this means of defense previously overlooked by American industry.

The June Hearing

At the hearing before the Tariff Commission held in Washington during May and June, testimony was offered to show that business in transparent cigar and cigarette holders and various forms of jewelry is being seriously injured by the importation of low-priced imitations from abroad. These imitations are being sold in the United States at from one-half to two-thirds less than the genuine Bakelite articles. They are imported chiefly from Austria and Czecho-Slovakia, where lower wages make cheaper production possible. In these countries the manufacture is often a house industry, the various members of a family making their individual specialties such as necklaces, cigarette holders, and so on, at home. The imported goods are quite similar in appearance to those made in this country. Evidence furnished at the trial showed that the foreign importations were being sold as genuine Bakelite in such a manner as to take unfair advantage of rights of trade-mark, patents, and the good-will which the

Bakelite Corporation has built up in the United States.

It was pointed out that even though the importers did not import material actually labeled Bakelite, they were nevertheless encouraging the jobbers to buy the imported material instead of Bakelite. After the sale had been transacted, it was stated, there was then nothing to prevent the jobbers from re-

selling the imitations as genuine "Bakelite"—an unfair practice which had become quite general. Such transactions, being of a secret and verbal character, are almost impossible to prove in any one instance; and the great number of such dealers in and importers of cigar and cigarette holders and small items of jewelry makes it equally impossible to check the alleged violations of trade-mark rights by means of individual suits against jobbers or dealers in this country.



How It Started !

The pyroxylin plastic manufacturers can give a vote of thanks to Helen Wills, the Women's National Tennis Champion. She created a fad that has been a life saver for the sheet-end of the business.

Wherever one goes these days are seen eyeshades similar to

that worn by Miss Wills. On a local train the other day four children in the car had them on, innumerable truck drivers were passed wearing them and almost every factory yard had at least one workman with this type of eye shade.

Long may they be popular.

Section 316 of Title III of the Act of 1922 extends to the import trade practically the same prohibition against unfair competition as the Federal Trade Commission Act provided for inter-state commerce. Such practices as counterfeiting and imitating goods, commercial bribery, concealed and open bounties, full-line forcing, and false and misleading advertising thus came under a ban which provided the penalty of additional duties, or in extreme cases the absolute exclusion of the imported product.

Final briefs were submitted by both the manufacturers and the importers on July 3, and a decision by the Tariff Commission is shortly to be expected.

Celluloid Co. Announcement

The following statement was issued August 3 by the Celluloid Co. of Newark, N. J., and signed by the directors of that company:

"In view of the disturbing and in some instances false statements that are being circulated by persons styling themselves 'Investment Specialists' and others, your board of directors feel it is their duty as your representatives to inform you as to the present operations of your company.

We herewith wish to show the operating results of the first six months of last year against the first six months of this year. The operating loss in 1925 after current depreciation and all expenses was \$353,482, against \$51,098 in 1926. Our shipments are 15% ahead of the previous year and all departments are showing an improvement in operation over last year. We are hopeful of a continued improvement.

Instead of listening to irresponsible statements and being thereby influenced to sacrifice your stock, we advise that you seek information from the sources best qualified to furnish it; namely the management of your company, or your bank."

Robert Campbell Heads Celluloid Company

ROBERT CAMPBELL, who is now the President of the Celluloid Co., at Newark, N. J., and whose election was announced in PLASTICS for July, has assumed his duties on July 15th.

Mr. Campbell was for many years connected with the Nairn Linoleum Co., and recently was the Vice-President of the sixty million dollar combine effected between the Congoleum Co., and Nairn Linoleum Co., known as Congoleum-Nairn, Inc. He is the son of Peter Campbell, one of the founders of the American linoleum industry, and was born at Kirkealdy, Scotland, coming to America when eight years old. His father was instrumental in starting the great linoleum works along the banks of the Passaic River at Kearny, N. J., just across the river from Newark, and not very far away from the plant of the Celluloid Co.

Thoroughly Experienced

The linoleum works were started as the result of a visit to America on the part of Sir Michael B. Nairn, whose original intention was to merely build a storehouse for the imported product, as it is well known that this branch of the flooring covering industry originated in the British Isles. Sir Nairn interested Thomas C. Sloane and as a result of their conference they sent for Peter Campbell, who was put in complete charge of putting up the plant, and afterwards to run it.

Robert Campbell entered the linoleum business twenty-three years ago, starting in the manufacturing end and thoroughly familiarizing himself with the business. When Mr. Peter Campbell retired from actual work, the son was well trained to assume the direction of this



Robert Campbell

Who assumed office as President of the Celluloid Co. in July.

huge enterprise. As a result of his connection with this company, Mr. Campbell was able to travel, and to visit and study the conditions in all the plants connected with the Nairn organization. This included plants in Scotland, France and Germany.

As the result of this experience, Mr. Campbell appears to be eminently fitted to take charge of as complex a manufacturing organization as the Celluloid Co., and it is confidently expected that by his sagacity and leadership he will be able to again put this plant on a well paying basis. Mr. Campbell has the best wishes for success from a large number of friends in the floor-covering industry, who are aware of his ability, and are expecting equally great things from him in the closely related plastics industry.

Molding Method Secures Smooth Surfaces

While primarily intended for doll-heads, this process can be employed advantageously for other purposes

William J. Gaven and Michael Fried

Patentees

A NOVEL method of molding plastic materials is the subject of a recent patent granted to William J. Gaven and Michael Fried, of Mount Vernon, N. Y., U. S. Patent 1,569,625, Jan. 12, 1926. The invention can best be described in the language of the inventors who state that:

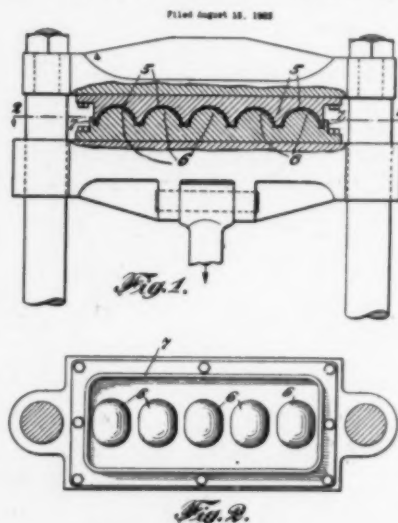
"This invention relates to an improved method of molding plastic materials and has for its primary object and purpose to provide a method for producing commercial articles, such as doll heads and other toys, sound reproducing records, record cores, amplifying horns, parts of radio receiving and transmitting apparatus, and various other articles where it is desired that the composition material of which the article is formed shall have an outer or exposed surface perfectly smooth and non-porous for the purpose of receiving a suitable paint or coloring composition without further preparation.

How It Differs

"In the accompanying drawing, we have illustrated more or less diagrammatically, sufficient of a molding apparatus such as is used for molding doll heads, whereby the nature of our present improved method may be clearly understood. Figure 1 is a view, partly in cross section, of such apparatus with the dies thereof arranged in pressing position and Figure 2 is a plan view of the male die.

"In the manufacture of doll heads from plastic composition materials, in the molding apparatus, the female die which forms the exterior or outer surface of the article is in the lower

position and is movable with respect to an upper stationary die which forms the interior surface of the doll head. Therefore, it will be understood that in the use of such an apparatus, the composition material is first filled into the cavity of the lower movable female die member which, upon being moved up-



wardly to receive the stationary male die causes the necessary pressure upon the composition material so that the surplus is exuded therefrom and the exterior surface of the article formed by the wall of the female die member, while the interior surface thereof is formed by the male die member. Each of these die members is provided with suitable heating means so as to maintain the material in the proper plastic condition during the molding operation.

Smooth Outer Surface

In the use of the method above described, the article upon removal from the female die member invariably has a rough porous outer convex surface and a smooth inner surface. This

is believed to be due to the fact that the material is in contact with the heated wall of the female die member for a relatively long period of time so that the outer portion thereof becomes partially baked while the male die member which forms the inner surface of the article is in contact with the material for a very short period of time, not sufficient to completely evaporate all of the moisture and bake the inner wall portion of the article.

It is desirable to obtain a result which is the reverse of that just stated, or in other words, to provide the article with a perfectly smooth non-porous outer surface, although the inner surface thereof is rough and porous.

Details

"In the drawing we have shown an apparatus having the male and female molding dies arranged for the purpose of carrying out our new method and it will be observed that the upper female die members five are stationary while the lower male die members 6 are movable. Preferably, these latter die members are surrounded by an upstanding wall or flange 7. The die members 5 and 6 are suitably heated as in the prior art apparatus now in general use. The plastic composition material is applied over the male die members either by hand or a suitable mechanical feeding means, the material being confined against lateral flow or spreading by the surrounding flange 7 as the movable die members are moved upwardly into the cavities of the female die members where pressure is

(Continued on page 283)

\$250.00

in prizes for ideas

WANTED: NEW USES FOR PLASTICS

PYROXYLIN PLASTICS, PHENOL RESINS, CASEIN SOLIDS,
SHELLAC OR OTHER PLASTICS

Have you an original practical idea for a new use of plastics? Your suggestion may win one of the five prizes.

PLASTICS is going to pay \$250.00 in prizes to five men or women in exchange for new ideas. Why not be among them?

We are holding this contest in an effort to uncover original ideas for the use of all manner of plastics. These ideas will be given to the trade at large as soon as the prizes have been awarded.

The employment of pyroxylin-plastics in the making of fountain pens, for example, was a new and practical development. You may have in mind dozens of similar suggestions for new uses of these versatile materials. Any one of them may win a prize.

Everyone is eligible,—clerk, executive, bookkeeper, foreman—everybody. Send all the suggestions you have;—the more you send, the more chances you have of winning. The only restriction is that if your suggestion has ever been applied to that particular plastic it cannot win a prize.

The prizes will be as follows:

| | | | |
|------------|---------------------|------------|--------------------|
| 1st | - - \$100.00 | 3rd | - - \$50.00 |
| 2nd | - - 50.00 | 4th | - - 25.00 |
| 5th | - - \$25.00 | | |

This contest is open to all. There are no strings tied to it; you do not have to be a subscriber to PLASTICS. All entries must be delivered at the office of PLASTICS by noon August 15, 1926. The names of the winners will be published in the September issue.

Your suggestion will be judged solely on its merit, originality and practicality. No thesis or letter is necessary. However, the more detailed the description, the easier it will be for the judges to pass on its merits. If necessary, attach a sketch or drawing.

Prizes will be awarded according to the following conditions:

The use suggested must be new; that is, never before made in the plastic product suggested.

Its practicality.

Its human interest or need.

Its ease of manufacturing.

Its marketability.

JUDGES FOR IDEA CONTEST—

Hugh E. Agnew, Professor of Advertising and Marketing Research, New York University.
M. Hanenson, former President, The Piroxoid Products Corporation.
Carl Marx, Editor of PLASTICS.

Write out your ideas and mail them to-day to

Contest Editor, PLASTICS, 461 FOURTH AVENUE
NEW YORK CITY

PLASTICS will be glad to send reprints of this advertisement to any concern desiring to post it on bulletin boards or to place them in any conspicuous place.

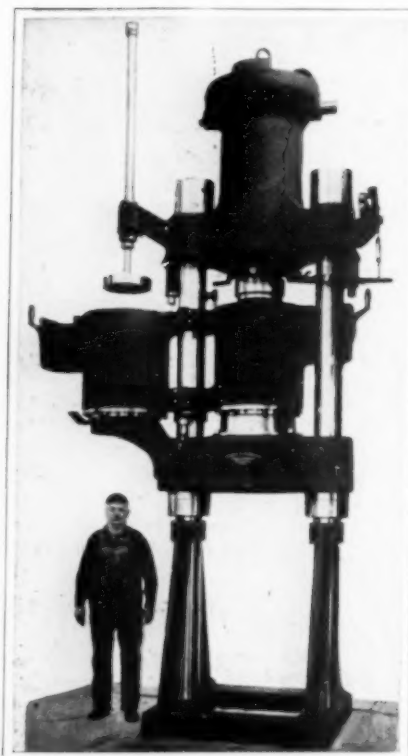
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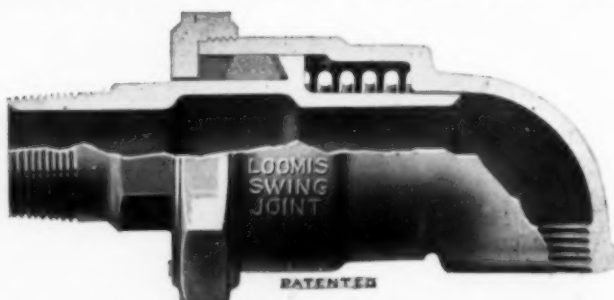
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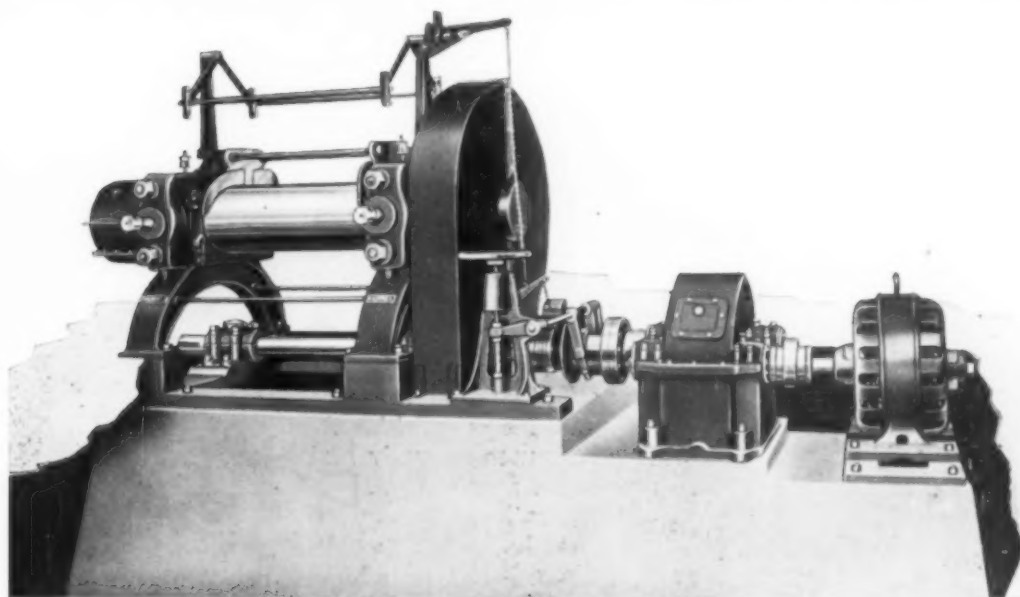


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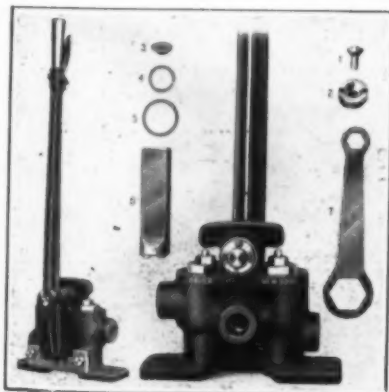
This machine has been especially adapted for working Celluloid, Pyroxylin Plastics and compounds of a similar nature.

These Farrel Rolls are furnished in single units or groups of two, three or four machines driven by a single motor and reduction. Each machine is independently controlled by a Farrel Coil Clutch and Brake.

Farrel Rolls fully meet the requirements of all State Labor Boards.

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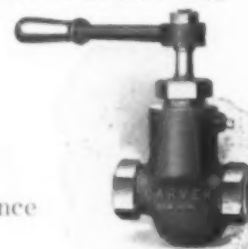
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EDITORIAL • IMPRESSIONS

Secret Processes and the Inventor

IN ONLY too many industries, there is an ingrained propensity to make a great ado about the wonderful results obtained by the use of some jealously guarded "secret process." The compounding of the materials that, perhaps, go into the make up of the material, is delegated to a few trusted employees, and even they are kept in supposed complete ignorance by the management, who orders the individual substances by number or letter, so as to more completely mystify the operators.

Visitors through the plant are either rushed through this "Sacred" part of the plant, or steered around it altogether, and when an occasional salesman comes in with a substitute for some of the supplies that enter into the great mystery composition, he is hastily put off the track by informing him that no such substance is needed.

The results, in some cases, are positively ludicrous. One particularly flagrant case happened in one of our Eastern cities a few years ago. A manufacturer was wont to buy a certain lacquer from his pet jobber, and paid a handsome

price for what he thought, and was told, purported to be a special mixture made up only for him. He paid six dollars a gallon for the concoction and thought he was getting a bargain.

One time a manufacturer offered to supply him with a standard lacquer for \$2.40, which was guaranteed to be as good as what he had been using. Did he order it? No, not at all. He asked for quotations upon some "special" mixture, and got it for \$5.50. He prided himself on his new source of supply and the money he was saving.

A few years later it developed that what he had been paying six dollars for was the \$2.40 cent goods that his original supplier had bought from the manufacturer who had offered it to him at that price, and had simply re-labeled. That's the price of "secrecy."

There is still another side, and a more serious one at that. Every once in a while someone patents a new process, and gets a good valid patent. No sooner is it published when the cry goes up on all sides "We have used this thing for years! It isn't new at all." Public use is cited against the patent in liti-

gation, perhaps, and then it develops that not one of these so-called "public" uses was public, and the final result is that the patentee "gets away with it," to put it into the vernacular.

What is the answer?

This is especially true of the industries covered by **Plastics**. It is about time that these "secrets" (which, in the final analysis will be found to really common to every worker in the industry) be dragged from their hiding places and given a long-deferred but health-producing airing.

No doubt many will be shocked by this suggestion. They will also be much amused when they finally read in cold type that what their competitor thought was new, had been used by a half a dozen others. Secrecy certainly is one way not to advance an industry as a whole. Co-operation, interchange of ideas, friendly though keen competition and greater productive efficiency are the only weapons with which to combat any business depression.

It has been done in other industries—usually through the agency of the trade paper. Here is **your** opportunity. "God Helps Them Who Help Themselves."

Fire!

ON ANOTHER page of this issue, we are reproducing a very instructive article on the prevention and combatting of conflagrations in plants making or handling pyroxylin plastics.

The general newspaper reporter takes a positive delight in describing how "celluloid" exploded with a "roar." Now everyone who has ever handled this material knows that it does no such thing. But it will burn—and a plenty.

However, ninety-nine per cent of all such occurrences can be laid at the door of that Master-Criminal of All—**Carelessness**. Sins of omission, in the case of safety precautions, in a plant handling such products, certainly avenge themselves upon their perpetrators. And besides, they give the whole industry a bad name. So if you are handling pyroxylin products, do your share.

PLASTICS

The Contest

THIS is the last month of our "New Idea" contest. Many, many suggestions have come in, as was expected. But there is one peculiar feature. It appears as though there are still a great number of people who have but the faintest idea of what "Plastics" really are.

Thus far, most of the suggestions have centered around the pyroxylin type of products, and a few scattering, mainly on
(Continued on page 279)

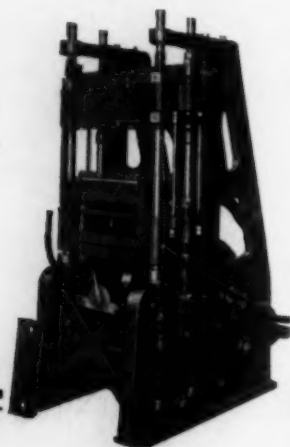
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The TERKELSEN MOLDING MACHINE Presses

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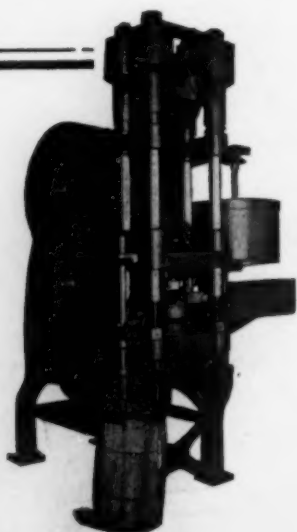
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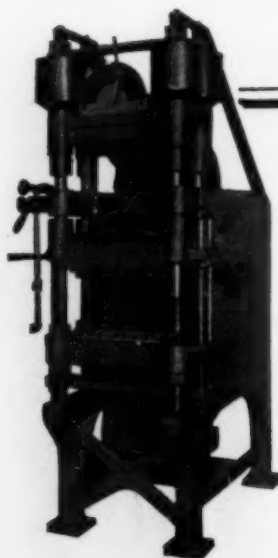
Would you care to look through our bulletins

Terkelsen Machine Company

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Model C-1



Model A-1

Safety First

(Continued from page 262)

stood by a number of trained workers, so that they will know how to properly employ them; which takes a certain amount of practice.

At least two operators on each floor should be trained how to act in case of a flare up. The fumes given off from burning celluloid are more dangerous than the flames themselves. Windows should immediately be opened, even though this might give more oxygen to the fire, but this may give an opportunity for leaving the room in an orderly fashion and prevent a disastrous panic.

The Greatest Danger

The point of great danger in working with pyroxylin plastics is the small sized waste. If such is allowed to accumulate, and a fire breaks out, there is almost no method known that will prevent its rapid spread. Any factory manager who would be so grossly careless, and nothing less is meant, as to allow such waste to accumulate without providing proper means for taking care of it as soon as it is produced, should be severely punished by law if anything untoward occurs.

If on visiting a pyroxlin plant, you should notice conditions that make it appear as though improper care were being taken to prevent fire, you could do no greater service than to notify the fire department inspectors, for it would be a distinct benefit to all those who are employed in such a plant. Carelessness is absolutely unforgivable in this industry.

Fire Doors

Regarding the use of corrugated iron fire doors, it is suggested that these should be of the double swinging type rather than the roller shutter type. The latter may possibly get stuck and fail to operate. The double-swinging doors, however, can always be opened by a push, but nevertheless will hold back fire

the minute the last man makes his escape.

Although the above was written regards conditions in Germany, we feel sure that they are just as applicable to America. Within the past month there has been public notice regarding at least one very serious fire in which five young women lost their lives due to the flaring up of a sheet of celluloid that was carelessly being sawed on a circular saw. In this case the piece of burning celluloid was thrown into an open stack of celluloid sheets and the whole room was ablaze in a moment. Improper building construction and panic did the rest.

Pyroxylin plastics, as often stated, are safe if handled right. Every new fire gives the article a bad name. It is up to the manufacturers and fabricators to set the example by being careful, not only today, but "Always."

Magnesite Cement

(Continued from page 264)

cements have also been used as a filler for celluloid articles, such as brushes, mirror-backs, toilet seats, etc. Contrary to general opinion, magnesite cements when properly made, are water-proof, and as they can be made in almost any color, especially as described in connection with the work done at Midland, should present some very interesting possibilities to the mold-er of art objects and articles of general utility. Suggestions: ash trays, cane and umbrella handles; pin trays, ornamental plaques, clock-cases, advertising novelties in the form of paper weights, small statuettes and wherever a pure white or highly tinted plastic object is wanted.

The relatively low cost of the material as compared with plastics that require heat, and the fact that the magnesium oxychloride cements will rapidly harden and form a strong bond, makes them very interesting to those who are searching for a new medium for molded goods.

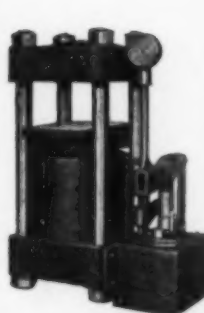
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A complete line for the manufacturers of insulating parts
DIALS - KNOBS - VARIOMETERS - BATTERY BOXES
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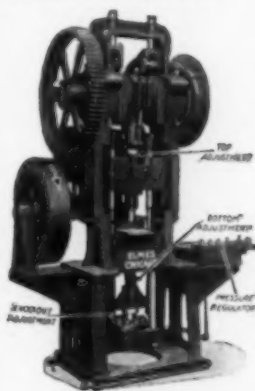
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No. 2693
Patented Fool-Proof
Control

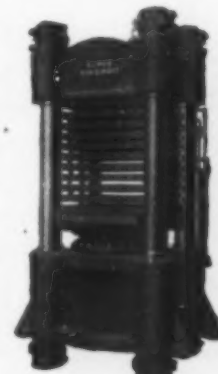


No. 2793
Heating and Chilling Unit
Built to suit specifications.



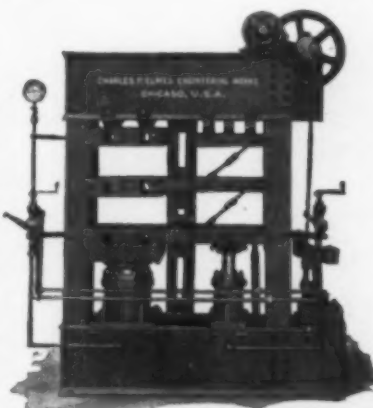
No. 2635
Automatic Tablet Machine
for larger Sizes of Preforms
From Powdered Materials.

Semi - Automatic
Press No. 2693 is the
only design of press
where knockouts are
returned without mov-
ing the press ram, or
manipulating the
valves. This patent-
ed feature permits re-
seating knockouts and
die buttons without
loss of time, and a
maximum clearance
for cleaning and re-
filling dies, which
gives 10% to 20%
greater output.



No. 2380
Heavy Duty Hot Plate
Press Forged Steel Plates.

Automatic
Tablet Machine
No. 2635 is pro-
vided with Special
form of
Pressure Regu-
lator adjustable
to suit product
and accommo-
date a variety of
sizes in tablets.
Uniform density
assured in large
preforms by ap-
plication of pres-
sure on both top
and bottom of
material. Can
stop at any posi-
tion of stroke.

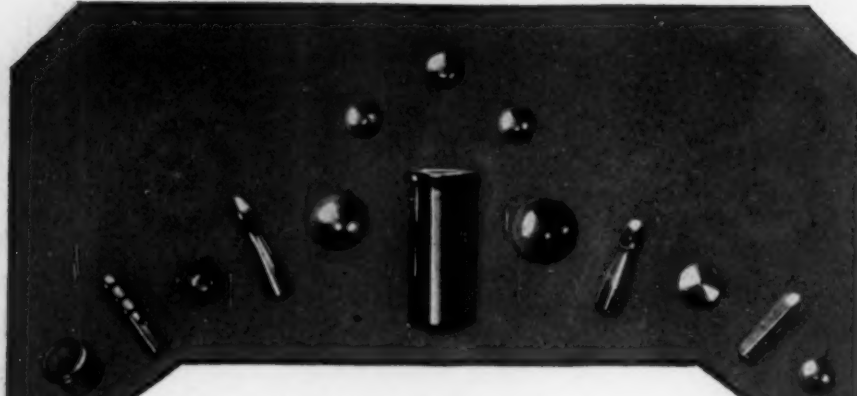


No. 2247
Combination Heating and Chilling Unit

For MEDIUM
and SMALL
PLANTS we offer
Self-contained
Combination
Heating and
Chilling Unit No.
2247. The Plates
are arranged for
steam, gas, or
electricity and
cold water cir-
culation. Port-
able Molds for
transferring from
Heating to Chilling
Press. Auto-
matic Cut-out
permits opera-
tion of either
press at will.

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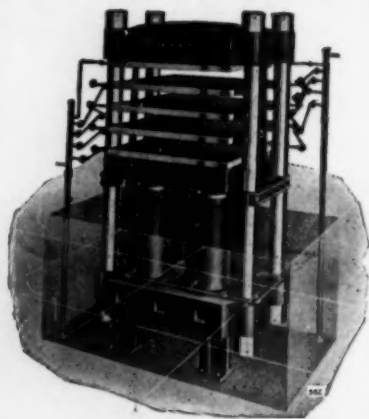


**Expert Turners of
Celluloid Beads—Buttons—Handles
—Knobs, Etc.**

from 100/1000 thickness up to 1 inch
Guaranteed accurate up to 3/1000 of an inch
Our last year's Umbrella Tip production alone
exceeded 300,000 gross
We solicit inquiries on quantity items

George Morrell, Inc.
104 5th Ave. New York City
Factories: Leominster, Mass.

French Hydraulic Machinery



**Hot Plate Molding
Presses**

Write for catalogs.

We build all types of Hydraulic Presses for the molding industries—drilled steel or cast plates, semi-automatic molding presses, die sinking presses, etc.

The French Oil Mill Machinery Company
Piqua, Ohio

New York

Cleveland

Chicago

Versatility of Casein

(Continued from page 265)

good quality casein also involves considerable technical skill. The plant necessary includes centrifugal separators, evaporators, vats, filter presses, and power for this machinery. The capital investment, however, is not very heavy.

In the Paper Industry

The industrial uses of casein are numerous and varied. One of the chief applications is found in the paper industry, where it is used in art papers, colored papers, transfer papers, cardboard boxes, cartridge cases, paper flasks, and wrapping papers. Paper pulp vessels can be rendered impervious to moisture through the addition of casein, paper containers for the storage of clothing can be made waterproof and resistant to moths in the same way, and wall paper can be rendered washable. Among other products are drawing paper, which is made erasable by casein; high-grade papers for the production of half-tone illustrations, which are produced by the addition of casein and certain clays; and sizing or enamelling of papers, made possible by the addition of casein.

Quite recently an American concern produced a paper, based on a German patent, involving the use of casein, which is proof against oil, water, grease, rust, and can be used for a great many different purposes, both in and out of doors, such as posters, lithographic papers, blue prints, sand and emery papers, bags for tobacco, foods, lime, cement, and paints.

Next in importance to the paper industry as a user of casein probably ranks the adhesives industry.

Casein Plastics

The last five years have seen the appearance on the market of a growing number of casein plastics, among them being Inda Aladdinite, Erinoid, Lactite, Galalith, and Karolith. These

casein plastics are non-inflammable, odorless, and constitute excellent electric insulators. They can be easily sawn, drilled, glued, and dyed in an extensive range of single or marmoreal colors. They can also be bent and pressed, and can be machined on lathes and automatic machines. These plastics have given highly successful results in the manufacture of radio equipment, magneto terminals, telephone parts, collector rings, switch handles and bases, button pushes and plugs. One of the plastics, for example, in a plate 2 mm. thick, is impervious to electric current even when the E. M. F. is 16,000 volts.

Another use is found as a substitute for jade, lapis-lazuli, coral, tortoise-shell, etc. Casein is being increasingly adopted as a substitute for celluloid, its great advantage being non-inflammability, although it has not been produced in very thin sheets essential for transparent windows, labels, or thin coverings.

In view of the fact that excellent substitutes for more costly materials can be produced with dyed casein plastics, a large number of such common articles as beads, brooches, shoe and belt buckles, buttons, cigar and cigarette holders, chessmen, dice, dominoes, checkers, combs, manicure sets, pen and pencil holders, umbrella and cane handles, toys, piano keys, and organ stops are now being made of casein plastic.

(Continued in September)

The Contest

(Continued from page 274)

the phenol resins. Perhaps a good many of the prospective competitors are holding out until near the end, so it is too early to venture any predictions. However, do not neglect this opportunity to further the industry by trying for a prize. It is not only to your own, personal, advantage—but to every producer and manufacturer of plastic materials.

Your living depends upon the prosperity of the industry. The answer is obvious.

Nulite Polish Co., Inc.

Fifty years' experience manufacturing all abrasive and finishing compositions are now offering to the fabricators and moulders of all casein, pyroxylin and bakelite products a finishing composition surpassing anything yet achieved in this line.

We solicit your inquiries and will cheerfully furnish samples on request

Nulite Polish Co., Inc.

248 Plymouth Street

BROOKLYN, N. Y.

"PAISPEARL" SOLUTIONS

have no equal for dipping or spraying when that beautiful pearly effect is desired.

The exquisite lustre of the natural Pearl so much in vogue can easily be applied on GLASS, WOOD or CELLULOID articles. We will gladly coat a sample for you to demonstrate the wonderful improvement it effects, at a minimum of cost.

Write to us for full information.

PAISPEARL PRODUCTS, Inc.

65 NASSAU STREET

NEW YORK CITY

LABORATORIES—Eastport, Me.
Yonkers, N. Y.

PRODUCTION PRESS EQUIPMENT *for* THERMO- PLASTICS

With the rapid expansion in plastics molding, there is need of really efficient machinery for molding in large quantities. H-P-M is making presses to meet this need.

We make the H-P-M Composition Molding Press, Six Station Turret Type for such products as storage battery boxes. Among its production advantages over plain single presses are: more production, less investment per unit of output, less labor.

We also make the H-P-M Bakelite Molding Press, revolving head—sliding table type, with Full Automatic Timing Control. It will turn out perfect molded parts with no attention from an operator during molding cycle. One skilled attendant can serve several of these presses in placing the raw powder and removing finished parts.

*Submit your production molding
problems to H-P-M*

THE HYDRAULIC PRESS MFG. CO.

ENGINEER BUILDERS SINCE 1877

MOUNT GILEAD, OHIO

H-P-M
HIGH PRESSURE HYDRAULIC
PUMPS PRESSES VALVES

"FOR YOUR PRESSING NEEDS"

Albertol Resins in Electrical Industries

(Continued from page 267)

ductivity of the carbon is sufficient to permit of their use. The brushes are immersed in a solution of a special Albertol in alcohol, or a cheaper solvent such as tar-oil, acetone oil or the like, the impregnation being effected by alternate exposure to vacuum and pressure, as is usual in treating wood. They are finally dried and heated to 150°C. When compared with untreated brushes, they show much greater resistance to wear.

Lamp-base Cements

Another use is for cementing in the bases of electric incandescent lamps and related products such as audion tubes, a special product known as Albertol 60-K being furnished for this purpose. It is dissolved in alcohol, mixed with fillers into a paste, whereupon this is placed in the base and the lamp inserted. After drying to remove the main portion of the alcohol, the bases are sufficiently heated to harden the material, without, however, arriving at a state where the material could not if desired be sufficiently heated to allow of removal of the lamp or tube. For very large lamps this feature is omitted and completely hardening material is employed.

Although it is admitted that there are cheaper raw materials for making some of the articles enumerated below, in every case where quality and resistance to heat and mechanical influences are desirable, the Albertol resins, as well as their congeners, such as the Bakelite, Resinol, Condensite, Redmanol and the like, are highly desirable. They serve for the preparation of wall board, furniture parts, buttons, revolver handles, brush-backs, razor - handles, photographic trays, pictures and frames.

The phenol-free Albertol resins such as the 71-V, 72-W and 75-Z are especially well suited

due to their freedom from odor. Where there is no particular need for electrical resistance, wood powder can be employed as a cheap and light weight filler, a black color being easily obtained by means of nigrosine. Colored articles should be made with mineral pigments, as most of the aniline dyes will not stand heating to 150°C, which is the temperature required for the best results.

Packing Material

By saturating wood with solutions of, or with the liquid resins, a product, having a very high gloss is produced. Packing material can be prepared from these hardenable resins by impregnating fiber with the same. By placing such a gasket in a flange, the heat will at first soften the material so that it will fit tight against the surface of the fitting, whereupon the continuation of the heat will gradually transform the material into the infusible form, thus producing an absolutely tight joint. R. Koenig, gives a formula for impregnating wooden forms with Albertol resins, which comprises:

Impregnating Wood

30 parts Albertol resin (best 35 K); 10 parts viscous cumarone resin; 5 parts tar oil; 55 parts acetone.

This mixture will stand reasonable dilution with methyl alcohol or with higher boiling benzines. Another use for the Albertol resins is in the manufacture of abrasive wheels. For producing emery wheels, Albertol 70 U is especially well suited, employing 15 parts of the resin for 85 of the emery. The formed wheels are dried at 100°C and then baked at 160-170°C for a few hours.

Complete articles of Albertol have not as yet been prepared, although it has been used in cheap jewelry as a glaze. A special type of Albertol has found application as a coffee-glaze, some of it is used in the preparation of bronze-powder papers,

Hydraulic Presses

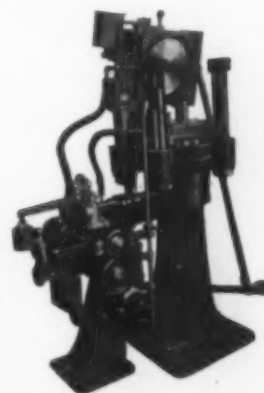
Especially designed for the molding of rubber, Gutta percha, celluloid, casein, bakelite, and other plastic materials.

We show here just a few examples from our large line. They are made in standard sizes from 10 to 1,800 tons capacity and the number of plates and size of openings can be made to suit conditions. The top platens can also be made adjustable to accommodate various heights, of dies, etc.

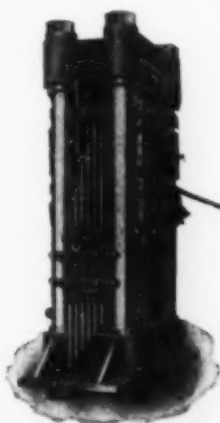


Plain Heating Press

These Tilting head presses are practically automatic; the application of hydraulic pressure, duration of time of steam and cold water circulation through the dies being controlled by the valve mechanism. These automatic features do away with the human element in the timing of the heating and cooling of the dies, thereby insuring a uniformity as well as materially increasing production.



Semi Automatic Molding Press with Tilting Head



Multiple Plate Heating Press

We are prepared to furnish complete hydraulic installations, including pumps, accumulators, valves, fittings, etc. Watson-Stillman presses are characterized by their strength and simplicity. Their rugged construction will stand up under most severe conditions.

Write for catalogs.

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Detroit

Cleveland
Richmond

St. Louis
Philadelphia

E. W. WIGGINSOffice & Warehouse
LEOMINSTER, MASS.

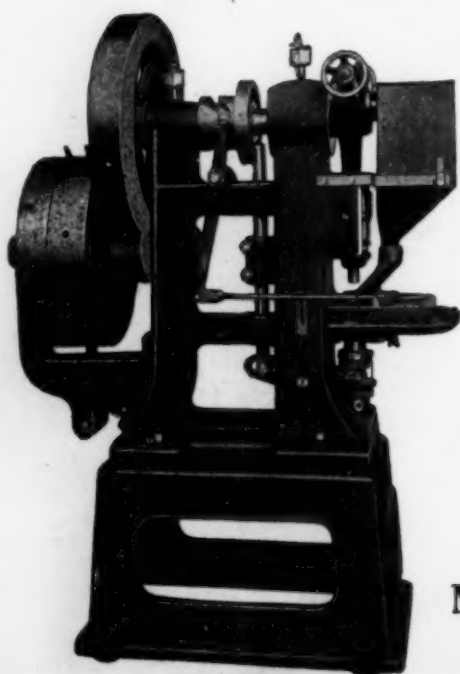
Tel. 1451-W

Exclusive Sales Agent in
New England Territory for**Nixon Nitration Works****NIXONOID****Pyroxylin****Sheets, Rods and Tubes****JOS. H. MEYER BROS.****Pearloid Sheets and Solutions****NACROLAQUE**The new non-inflammable
pearloid sheeting in a variety
of colors. For the novelty
and toilet ware trade.and some for fireworks, wherein
it replaces shellac.**Conclusion**

It thus appears that in these oil-soluble resins, there is being provided a useful substitute for the natural resins, and it is to be hoped that further improvements will lead to their widespread adoption. The non-oil-soluble resins have already assumed their place as a valuable material for industrial uses, and they are replacing not only products ordinarily made from resins, or at least from plastic substances, but are being employed for such uses as gear wheels, clutch and brake linings, machine parts such as distributors for automobile and airplane ignition, impregnated battery boxes, fountain pens, watch and clock cases, and as substitutes for horn and celluloid, over which later they have the great advantage of practical non-combustibility.

For the Future

What still remains to be done is for some one to discover an efficient plasticizing agent for these resins, so that they may be employed under conditions where elasticity and resilience of a high degree are essential; while at the same time conserving their transparency and light color. When this has been accomplished, an entirely new field will be opened to this industry, so that it will perhaps be possible to prepare waterproofed fabrics, photographic films and even artificial filaments entirely from purely synthetic materials, which can hardly be said of the cellulose products, as these require at least one natural product for their preparation. Here is a fertile field for the investigator, and the rewards will be commensurate to the importance of the contribution.

FJS**STOKES****Bakelite Preforming Machine****40 to 60**preforms
per minuteWeights accurate
and easily adjustedOdd shapes and
perforated pieces
easily producedWe also manufacture a
Measuring Machine
which weighs without
preforming**F. J. STOKES
MACHINE CO.**5834 Tabor Road,
Olney P. O.
Philadelphia**FJS**

Molding Method

(Continued from page 3)

applied to the composition material. The cross-sectional contour of the article is thus produced and since the outer convex surface thereof formed by the female die members is in contact with the walls of said die members for only a short period of time, the composition material will not be subjected to a prolonged heating action, and such surface when the article is removed from the male die member will, therefore, be perfectly smooth and non-porous.

Older Methods

"Heretofore, in forming such articles in the manner first explained, it was necessary to dip the outer surface of the article into a suitable composition material to close the pores thereof, and then subject said surface to an abrading operation by the application of sandpaper or other means so as to render the same perfectly smooth, before it was possible to apply the paint or surface finishing composition. Furthermore, after the dipping operation, it was necessary to place the article upon a drying rack where it remains for a period of from twenty-four to forty-eight hours before it was possible to sandpaper the surface. It will be apparent that by means of our new method, these operations and the labor and time incident thereto, are obviated, and as soon as the article is removed from the molding apparatus, the perfectly smooth non-porous outer surface thereof can be immediately painted and finished in the desired colors.

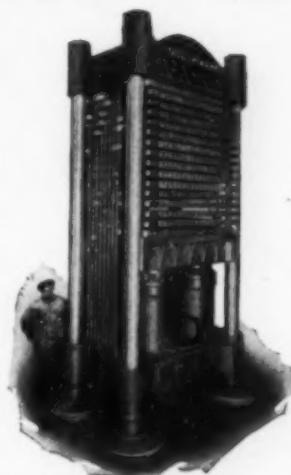
Advantages

"We have found our new method particularly desirable in the manufacture of doll heads from plastic composition materials, but in addition thereto it will be manifest that our improvements might be advantageously used for various other purposes, as in the production of sound reproducing records, amplifying horns.

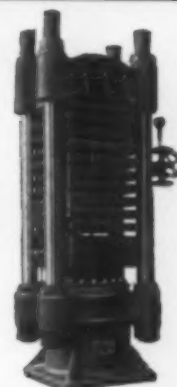
QUALITY PRODUCTS

demand accurate,
well built machinery

SOUTHWARK



800 Ton—15 Opening
Steam Platen Press
4 Cylinders



900 Ton—
10 Opening
Steam Platen
Press

HYDRAULIC EQUIPMENT

is used
by the

Largest Manufacturers
of Molded Goods

Hydraulic Pumps, Accumulators,
Valves, Fittings, Etc.

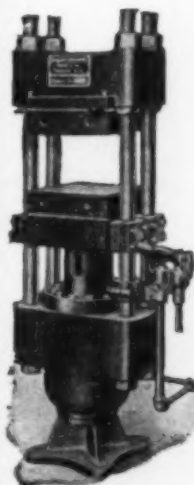
SOUTHWARK
Foundry and Machine Co.
402 Washington Avenue
Philadelphia, Pa.

AKRON, O.

CHICAGO, ILL.

MOLDING PRESSES

UPWARD or
DOWNWARD



Established 1872

To
Suit
Your
Work

ANY SIZE
ANY PRESSURE

Let us help
you work
out your
problems



Dunning & Boschert Press Company, Inc.
No. 330 West Water St. SYRACUSE, N. Y.

Highest Grade
CELLULOSE ACETATE

Stability.

Low acidity.

Clarity.

Uniformity.

Any desired viscosity.

Prompt Delivery.

Accurately controlled for definite solubility factors in various solvents, milled to a uniform bulk per weight and adjusted to obtain maximum solution in minimum time.

Made in U. S. A. Samples sent on request.

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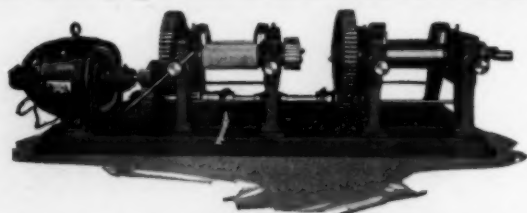
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"MAY WE HAVE THE OPPORTUNITY?"

The Adamson Machine Company

AKRON, OHIO, U. S. A.

Engineers, Machinists, Iron and Steel Founders

**The World Trade
 in Pyroxylin Plastics**

ACCORDING to the *Chemische Industrie* (see *Gummi-Zeitung*, 1926, p. 1725) the world production of celluloid is estimated to be from 30 to 40 million kilograms per year (a kilogram is 2.2 pounds avoirdupois). Of this amount the United States produces about one-half of the total, or from 20 to 30 million kilograms; Germany produces 10 to 12 million kilograms; France 2 to 4 million; and England and Japan from 1 to 2 million. This shows that there are but five countries which have a comparative large production of celluloid.

Besides these three other countries (Austria, Italy and Holland) each have a small plant for making this commodity, their total production being less than a half-million kilograms.

French Production

The output of the French factories has been as high as 5 million kilograms, but in 1924 only 2.25 million kilograms were made, the production being divided between four large, and five smaller plants. The French "Societe des Matieres Plastiques" has three factories and manufactures 1.8 million kg. of plastic materials, of which 1.25 million kg. were celluloid. The two other large plants, both located at Oyonnax, was 300,000 and 250,000 kg. respectively; and the smaller plants produced about from 250,000 to 350,000 kilograms.

According to Louis Clement, the world consumption of cinematographic film is not less than 425 million meters (of 39.37 inches each) per annum. This requires a consumption of about 3 million kilograms of cellulose nitrate. The United States alone consumes 60 per cent. of the moving picture film made. Ordinary photographic film also requires a large amount of celluloid. In France, for example, the daily consumption of film is 30000 kg., or over 900 tons per year.

How, Who, Why

Answers to queries
from our readers.

Q. Can fountain pens be made from casein plastic materials, such as Galalith?

Ans. Certainly, but with this precaution: the ink must under all circumstances be kept away from the plastic material itself. This is accomplished by making such pens self-fillers, that is, inserting a rubber-bag which acts both as an ink holder and serves the function of the rubber-bulb on the ubiquitous medicine dropper formerly used with old-style pens. The many color combinations possible with casein make this a very attractive material for the purpose. We suggest that you communicate with some of the manufacturers of casein plastics.

Q. How can celluloid be inserted in window-envelopes?

Ans. Would not advise its use. What you see in window envelopes is either nothing more than transparentized thin tissue paper pasted in, or in some of the latest types, some viscose material known as Cellophane. The best-known type of window-envelope simply has a part of the paper itself treated with a balsam-like mixture which renders the paper transparent.

New Plant

A new plant has just been completed at North Arlington, N. J., for The Baff Mfg. Co. It is a modern two-story building containing over 10,000 square feet of space.

The Baff family have been in the celluloid and novelty business for two generations. The head of the present business is Mr. A. Baff.

PRIZE WINNERS

WILL BE ANNOUNCED
IN SEPTEMBER.

Did you try?

THE PRECISION BENCH LATHE



Fitted with motor or counter shaft.

The tool with a hundred uses, for milling, slotting, grooving, splitting, edging, beveling, turning, drilling, etc., on wood, celluloid, hard rubber and metal.

We manufacture other tools, beveling machines, rod-turning machines, bench drills, rubbing spindles, etc.

Have you tried our hardened beveling-burr and cutters? If not send for sample order.

We specialize in dies, machinery and tools for celluloid, hard rubber and metal.

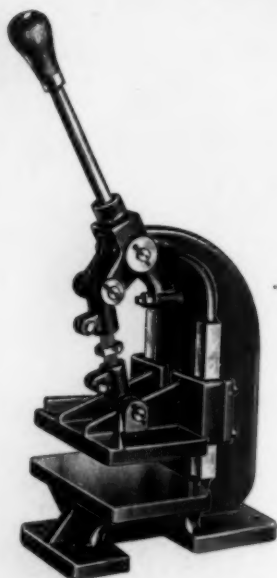
LEOMINSTER TOOL COMPANY, Inc.,
LEOMINSTER, MASS.

Bleached Shellac
Special for Composition Makers
Refined Bleached Shellac
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Lacquer Manufacturers



KASEBIER-CHATFIELD SHELLAC COMPANY
7 CEDAR STREET NEW YORK

No. 1 Hand Lever Press



This Press has been especially designed for:

Light press or swedging.

Drawing and forming.

Inlaid work on celluloid articles.

Quick adjusting, and easily operated.

Specifications:

Stroke $2\frac{1}{2}$ "

Adjustment of Ram $1\frac{3}{4}$ "

Maximum opening $4\frac{3}{4}$ "

Minimum opening $\frac{1}{2}$ "

Size of table $9" \times 5\frac{1}{2}"$

Weight 75 lbs., approximately.

We specialize in the manufacture of Machines, Tools, Dies and Molds for all kinds of Celluloid work.

Standard Tool Company, Leominster, Mass.

Have You Heard of Compo - Black?

A base to add body and brilliancy to all Plastic compounds.

Write for Samples.

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Gum and Shellac Specialist.

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Our Engineering Experience and Modern Equipment enable us to thoroughly and expertly meet your problems.

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WALTHAM, MASS.

German Pyroxylin Lacquers Firms Unite

Mention was made in Chemical Trade Bulletin No. 89-D, of the formation of an association of German pyroxylin lacquers, known as the "Gesellschaft deutscher Lackfabriken G.m.b.H." with headquarters in Berlin. More plants have become interested in the manufacture of pyroxylin lacquers, and a number of German lacquer enterprises, including the concerns of Schmidt and Wuelfing have formed a cartel or sales central. Simultaneously the firms in the cartel have pooled their process information on nitro-cellulose lacquer manufacture. The new cartel is known as "Tempoloid-Lack G.m.b.H." with headquarters in Dusseldorf. It is about to sell communally for all of its members. Firms so far united have plants in Dusseldorf, Feversbach bei Stuttgart, Hamburg, Cologne, Merchau bei Leipzig, and Vohwinkel.

New Viscoloid Plant Progressing

Leominster, July 20. — To make room for the new factory buildings of the Dupont Viscoloid Company, practically a small village is being moved. This afternoon the first of the houses went across the highway on Lancaster street, and during the next two weeks two more will be moved.

These new buildings will add greatly to the output of the Leominster plant.

The Worcester Consolidated Street Railway Company had a big repair truck on the ground there, to take down the trolley wires and put them back, while the Leominster Electric Light & Power Co. had another gang there to look after its wires, as did also the New England Telephone & Telegraph Co.

A Modern Molding Plant.

See the September issue.

TECHNICAL ABSTRACTS AND PATENT REVIEW

FABRICATION OF ARTICLES FROM ARTIFICIAL RESINS. T. Wieland, German Patent 423,883, appl. June 4, 1924.

The warmed or partially pre-condensed enamel of artificial resins is applied to the objects to be coated and is then subjected to heated gases or air. The first effect of this is to melt the material causing it to flow sufficiently to produce a proper glaze, following when it will harden. The prefire of the heated gases amasses the proper shape of the objects.

MOLDING MACHINE. Otto Mueller, U. S. Patent 1,573,009, Feb. 16, 1926.

A molding machine comprising connected upper and lower heads, a presser plate secured to the upper head; a table on the lower head adapted to be run in and out of the machine, means for raising and lowering the table, a turn-over plate adapted to be placed on the table, a flask adapted to be placed on the plate and other attachments necessary for operation.

RESINOUS CEMENT CONTAINING PHENOL RESINS. Leslie E. Frost, assignor to Westinghouse Electric & Mfg. Co. U. S. Patent 1,576,737, March 16, 1926.

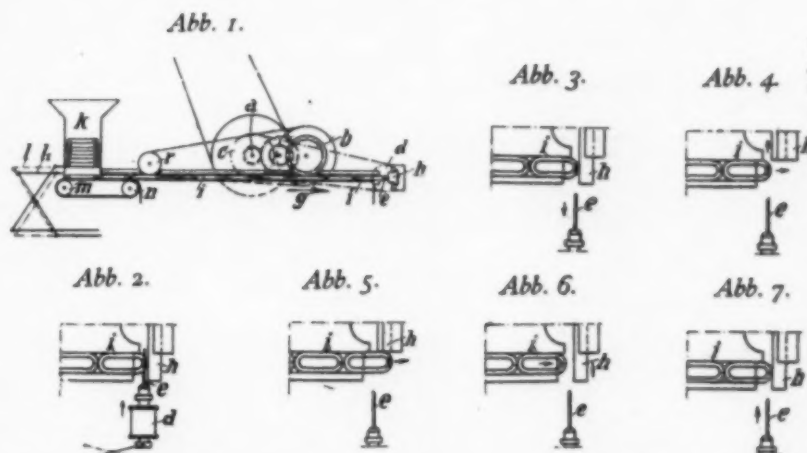
An anhydrous cement is made by dissolving a gum, such as manila gum, shellac, copal or the like in an anhydrous solvent as benzol, adding powdered phenolic resin of the type of Bakelite A, and an inert filling material like powdered silica. After the objects have been cemented together with this mixture, the same is rendered infusible and insoluble by heat.

PHONOGRAPH RECORD. Victor H. Emerson. U. S. Patent 1,576,582, March 16, 1926.

Consists of a specially prepared disc of paper composition with a superimposed layer of thermoplastic material. The paper core contains sufficient silica particles to prevent the paper from yielding during the molding operations forming the sound-grooves in the outer layers.

PLASTIC MATERIAL FOR COLD MOLDING. George J. Votapek, assignor to the Cutler-Hammer Mfg. Co., U. S. Patent 1,574,771, March 2, 1926.

The binder for a composition intended for cold-molding, followed by heat to set the material, consists of a resin of the phenol-sulfur type, with the addition of stearine pitch and inorganic fillers such as asbestos. The stearine-pitch considerably increases the ruggedness of the uncured molded products. The resin may be made from phenol, cresol, etc., by



AUTOMATIC DEVICE FOR BORING HOLES INTO BARETTES MADE OF CELLULOID, HARD-RUBBER OR SIMILAR MATERIALS. Richard Schumann, German Patent 426,954, appl. Jan. 31, 1925. 426,954, appl. Jan. 31, 1925.

It had been the usual practice to bore the holes into celluloid or hard-rubber barettes by hand. The present invention concerns a machine for doing this automatically, at a speed better than five ordinary operators.

The accompanying sketches are: Fig. 1: A diagrammatic view of the entire apparatus; Figs. 2 to Figs. 7, show details. In Fig. 1, the main pulley *a* drives the propelling disc *b* by means of a train of gears, and also,

by means of belting, the boring-tool *e*. This causes the propulsion of the barettes *i*, along the line marked by the arrow *g*, along a slide adjusted accurately to the width of the barettes. The motion is arrested by the bolt *h*. *k* represents the feeding arrangement for the barettes, which are forced forward by the pushers shown at *l*, being further propelled by the device *m* and *n*. The drill *e* is so timed that it will descend as soon as a barette gets into position. The exact operations are shown by cuts 2 to 7 which are: 2: drilling of the hole; 3: return of the drill; 4: release of the bolt *h* holding the barette; 5: ejection of the barette; 6: closing of the bolt *h*; and 7: new barette ready for descent of drill.

action of sulfur chloride, selenium monochloride or the like. Example: 175 parts of stearine pitch, preferably dissolved in 30% of its weight of a solvent as benzol, coal-tar oils, etc., are thoroughly mixed with 1225 parts by weight of a melted resinous reaction product of an organic substance and halogen-derivative of an element of the sulfur type; the mixture being incorporated, for example with 5000 parts of asbestos.

CELLULOSE ACETATE COMPOSITION AND FILM. Lester J. Malone and Stewart J. Carroll, assignors to Eastman Kodak Co., U. S. Patent 1,575,778, March 9, 1926.

Non-flammable cellulose acetate film is made from cellulose acetate, castor oil, and a transparency-inducing substance which also diminishes the combustibility. Materials disclosed include acetylene tetrachloride (tetrachloroethane), methyl alcohol, methyl salicylate, and tricresyl phosphate. The novelty lies in the use of castor oil combined with material that prevent the oil from making the film cloudy.

REFINING PEARL ESSENCE. Jean Paiseau, U. S. Patent 1,576,454, Mar. 9, 1926.

Fish scales and similar materials containing the iridescent scales desired for the making of artificial pearl, or so-called "Pearl Essence," are treated with proteolytic enzymes associated with the scales. Pancreatin, or pepsin may be used, the action being allowed to take place in a medium having the proper degree of acidity or alkalinity, depending upon the type of enzyme used.

COMB. G. Du Priest, U. S. Patent 1,576,041, March 9, 1926.

A comb comprising a plurality of removable and separable teeth, each of the teeth including a relatively large flat upper portion which includes tongue and grooved portions upon the opposite side thereof; a casing member fitted over the top, front and side of the forward tooth, a bar member extending transversely through the upper portions of the teeth; and other constructional features. The teeth can be replaced individually when broken or bent.

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Book Review

It is our object to bring to the attention of our readers any book that bears upon the subject of plastics. As this Journal is of only recent origin, we will review books that are not necessarily recent, so that Plastics will have an increased file-value to our subscribers as a guide to the art.

Celluloid; Its Raw Material, Manufacture, Properties and uses.

By Dr. Fr. Bockmann. Second English edition, revised and enlarged, by H. B. Stocks, F. I. C., F. C. S. 1921. 180 pages. \$3.50.

The first English edition of Bockmann's Celluloid issued in 1907, the second, revised edition being dated 1921. Considerable new matter was added for this edition, and the work is a good concise account of this industry.

The author quite evidently writes from the point of view of the European celluloid industry, although descriptions of the manufacture of cellulose as carried out in the United States are given under the heading of the Hyatt system. Quite evidently, however, the most modern, and partly "Secret" processes as used at the present time, are not included.

The work does not pretend to be as encyclopedic as the work of Worden (1920), but will supply much interesting information to those readers who wish to obtain fairly complete knowledge regarding the pyroxylin plastics.

The raw materials, such as the different forms of cellulose, esterification of cellulose, and preparation of guncotton, collodion cotton and other forms of cellulose nitrate are taken up in the first chapter. Camphor, camphor substitutes, solvents and diluents, as well as tables giving the composition of nitric and sulfuric acids from their specific gravity, comprise the second chapter.

The actual manufacture of the pyroxylin plastic is taken up in considerable detail in chapter 3. The author gives a short resume of the history of this art, followed by a description of the Hyatt process, Tribouillet and Besancele process; methods involving the use of solvents, and the process of J. R. France, which latter, however, dates back to 1888.

Artificial silk, due to its close relation to the cellulose esters in general is also taken up, constituting chapter 4. The properties of the pyroxylin plastics in general are touched upon in the next chapter.

The most important part of the work, from the fabricators point of view, is chapter 6, which discloses a number of tried and proven methods for the fabrication of articles from cellulose sheet stock, rods and the like. This comprises the manufacture of: artificial teeth, stained celluloid sheets in place of glass, celluloid balls, hollow articles, producing designs and incrustations in celluloid, imitation

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mosaic, celluloid collars and cuffs, phonograph records (now practically only of historical interest), umbrella and can handles and similar products.

Quite a number of methods for printing upon celluloid are given in this chapter, which closes with an account of celluloid films for photography. However, this part is not as up-to-date as would be expected. The manufacture of pyroxylin plastic films on the film-wheel, for example, is not mentioned at all. A number of proposed methods for rendering celluloid less inflammable are discussed.

The chapter on the preparation of lacquers from pyroxylin and celluloid are rather interesting, especially as showing that this art is by no means new. The book closes with a chapter on the most approved analytical and physical methods for testing celluloid, and for the control of its manufacture.

For anyone who does not care to invest in the large and highly technical works in this subject, this volume with its modest price, will be a welcome addition to the library of books on the pyroxylin plastics.

The Bakelite Corporation, Grove Street, Bloomfield, N. J., manufacturer of radio equipment, etc., has filed plans for an addition to cost about \$20,000. Headquarters are at 247 Park Avenue, New York.

Frost on Windows

According to U. S. Patent 1,573,503, of H. Phol and R. Neill, sheets of celluloid are employed to prevent the accumulation of frost on automobile or display windows. The sheet celluloid is bent at the edges to form flanges and attached to the glass. The material is applied, according to the inventors, to the inside of the show window or windshield. The effect is stated to be due to the dead-air space between the celluloid and the glass.

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